

Greece
1st Senior High School of Salamis (Team: Salamina Rockets Pi)

First European Astro Pi Challenge 2016 - 2017

Phase 1 - Describe your experiment idea

In order to demonstrate your motivation and creativity and receive an Astro Pi kit, come up with an experiment *idea* to be run using the Astro Pi on the ISS and its sensors (Sense Hat); then describe this idea using the fields below, identifying all the necessary steps that will enable you to run your experiment (*no coding needed at this stage: only an experiment idea!*).

The idea can be related to different aspects of life and work on the ISS. Search for cosmic rays? Record a loss of altitude or acceleration of the ISS? Or perhaps just detect crew movement?

The more creative, rich, and original your idea is, the more you will be able to demonstrate your motivation, and the bigger chance you will have to be selected for Phase 2 of the challenge. If your team is selected, you will also receive an ESA-branded Astro Pi kit, including all its sensors and components, directly at your school for free!

Our idea is to investigate the magnetic field around the earth using the Astro pi's magnetic sensor, as the ISS goes around the earth. If the magnetic field is above a certain level then the location will be marked as highly dangerous for solar wind attraction. Also we could use online NASA data to inform places with high magnetic field about a solar wind. The location data of the ISS can be taken from another external GPS device or can be estimated by using the initial ISS location data manually and then using the accelerometer sensor data and calculations. The noise from the powerful magnet inside ISS must also be isolated.

We can add an extra feature by measuring temperature, humidity and pressure in the morning hours and when detecting motion through camera will use a speaker and say "Good morning: temperature is..., humidity is... , and pressure is..."

(maximum words: 150)

Table 1. Investigation Steps

STEPS	DESCRIPTION	SKILLS/ KNOWLEDGE REQUIREMENTS
1	Search about magnetic fields	Physics
2	Getting familiar with magnetic sensor and how to get readings	Programming
3	Isolate noise from internal magnet	Programming, Mathematics
4	How to get location data	Programming, Physics, Mathematics
5	Get solar wind data online	Programming
6	Get magnetic sensor data	Programming
7	Get location data	Programming
8	Record data and compare with certain level	Programming
9	Motion detection	Programming
10	Temperature, humidity, barometric sensor readings	Programming